



RESEARCH
PROGRAM ON
Dryland Systems



North Africa and West Asia Flagship 2015 Plan of Work and Budget

Revised: June 2015

*Food security and better livelihoods
for rural dryland communities*

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Table 1. North Africa and West Asia Flagship – IDOs

Level	Level of organization within the CRP	Description of planned key activities at each level of internal organization	Expected results of planned key activities	Planned Budget (\$ 000s)
2	North Africa and West Asia	<p>Agro-pastoral system interventions (testing, piloting and scaling up): W1&2: Béni Khedache-Sidi Bouzid (Tunisia); W3/Bil: Morocco, Algeria, Tunisia, Libya, Egypt, Sudan, Djibouti, Somalia, Yemen, Jordan, Palestine, Lebanon, Syria, Iraq, Oman, Iran, Turkey</p> <p>Rainfed System interventions (testing, piloting and scaling up): W1&2: Saiss (Morocco); W3/Bil: Mauritania, Morocco, Algeria, Tunisia, Libya, Egypt, Sudan, Djibouti, Somalia, Yemen, Jordan, Palestine, Lebanon, Syria, Iraq, Oman</p> <p>Irrigated Crop Systems interventions (testing, piloting and scaling up): W1&2: Nile Delta (Egypt); W3/Bil: Syria, Lebanon, Palestine, Jordan, Iraq,</p>	<p>Progress towards CRP IDOs and indicators of progress</p> <p>ID01</p> <ul style="list-style-type: none"> Grazing lands productivity is improved by 20 % in communal rangelands under rest and managed by communities. (2017) 5 % of HHs will have more secured food access. (2017) Integrated crop-livestock: 10% of farmer communities in old land of Nile Delta adopted new feeding strategies. (2017) Improved crop yield: 25% increase in wheat and faba bean yields at farm level will lead to increase food security at national level by 10%. (2017) Climate change adaptation strategies: 2 climate change adaptation scenarios adopted by water planners. (2017) <p>ID02</p> <ul style="list-style-type: none"> Increased Income: 10% of low-income households in farmer communities increased their income by at least 20% after adoption of technologies introduced through the CRP-DS activities in 2015-2017. <p>ID03</p> <ul style="list-style-type: none"> 5 % of households improved their food access. (2017) Women and children dietary improvement: 10 % of households improved their dietary scores at farm level due to dissemination and adoption of new technology packages including high yielding varieties and better farm management (soil, water and crop). (2017) <p>ID04</p> <ul style="list-style-type: none"> 20 % increase in crops performance at participating farms in field sites. (2017). 	4,670.740

		<p>Yemen, Egypt, Tunisia, Algeria, Yemen, Iran, Morocco, Turkey</p> <p>Collaboration with other CRPs: WHEAT, DC, GL (crop rotation) WLE (water management)</p>	<ul style="list-style-type: none"> • Reduce land degradation by 30% due to the adoption of decision makers of well-understanding and better knowledge on salt dynamics, salt balance, possible build-up in the soil and water required for leaching; 10% of farmers adopted the best interventions identified by CRP-DS in salt-affected soils of the Nile Delta. (2017) • Improved water productivity of crops, trees and livestock: 25% increase in water productivity due to improved packages introduced and widely adopted by farmers. (2017) • Agricultural biodiversity: 10% change in levels of agricultural biodiversity maintained by households and uses derived from it due to intensification and diversification agro practices and anticipation of growing new crops (varieties). (2017) • Enhanced soil fertility: 15% increment in soil fertility due to diversification agro practices including cereal-legume crop rotation which improves the organic matter content that improves soil nutrient and water dynamics, soil structure and productivity subsequently reduce fertilizers application/cost and improve the farm revenue. (2017) • Best Management Practices adopted: 5% of farmers adopted cereal-legume crop rotation which improves soil nutrient status and productivity through use of fertilizer and nutrient best management practices (BMP). (2017) • Use or adoption of sustainable agro-ecosystem management: 25% irrigation water saving due to high adoption of sustainable agro-ecosystem management. (2017) <p>ID05</p> <ul style="list-style-type: none"> • Number of scientists, NGOs, development agencies, and policy makers whose awareness has been raised with regards to 1-gender wage gaps in paid agricultural labor and 2- gender differentiated impacts of technologies. (2017) • Involvement of women and youth in the decision process improved through the creation of at least 3 women/youth associations in the field sites. (2017) • Out-scaling gender equitable development interventions by NARS and partners: 20% improvement in the women-men ratio at farm level in adopting the introduced package to improve agricultural production system; 5% improvement on women access to technical support to their identified needs. (2017) • NARS and development partners adoption of guidelines for empowering rural women and increased gender equity: 10% improvement in institutionalizing of 	
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			<p>gender-equitable development interventions by involvement of women and youth in the decision making process. (2017)</p> <p>ID06</p> <ul style="list-style-type: none"> • At least 1 CBOs or boundary partners have adopted innovative organization approaches at each field site. (2017) • 2 innovation platforms established and operational and at least two communities' participatory development plans developed with all stakeholders. (2017) • Water and land policies analysed and documented; value-chains for sheep, olive, figs and cactus developed with the participation of all actors and stakeholders. (2017) 	
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Table 2. North Africa and West Asia - Cluster of Activities

Please note:

- Blue indicates capacity development activities
- Orange indicates gender-targeted activities

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2.1	Research Support	<p>Local Partners meetings, research site coordination, support to cross-cutting issues and to W3/Bilateral projects</p> <p>Partnership:</p> <p>CRP-DS CG Centres: ICARDA, IWMI, ICRISAT, ICRAF</p> <p>NGOs/CBOs: 5</p> <p>ARIs: 1</p> <p>NARS: 8</p> <p>Private Sector: 2</p> <p>Government Department: 6</p> <p>Academia: 2</p> <p>International Center (Non-CG): 2</p> <p>Development Projects: 2</p> <p>Scientists: 27</p>	<p>Annual report of the NAWA Flagship.</p> <p>2 IRT meetings.</p> <p>Follow-up on the progress of the 2015 workplan across NAWA action sites</p> <p>Identify the gaps of capacity development and design/contribute to designing key activities: a training course will be organised on Integrated crop-livestock feeding in favourable and resilient agro-ecosystems (September 2015), Ad-Hoc meeting (May 2015) to discuss the organisation of an international advanced course on conservation agriculture that will be co-organised by IAMZ-Spain, ICARDA and FERT-France on April 4-9, 2016.</p> <p>Contribute to fund raising to strengthen research activities in the NAWA flagship</p> <p>Capacity building (training workshops at different level) on integrated, gendered systems analysis, research design and modelling (1 week in Tunisia, May 2015; 2 weeks in Cairo, August-September 2015)</p> <p>Organise online discussions between researchers on gender & youth research approaches, and on synthesising results on same research topics (norms, labour)</p>	243.000
2.2	System Research: Agro-pastoral system interventions (testing, piloting and	<p>Location:</p> <p>W1&2: Béni Khedache-Sidi Bouzid (Tunisia);</p> <p>W3/Bil: Morocco, Algeria, Tunisia, Libya, Egypt, Sudan, Djibouti, Somalia, Yemen, Jordan, Palestine, Lebanon, Syria, Iraq, Oman, Iran, Turkey</p>	<p>Outputs in 6 months:</p> <p>(ICARDA-1) None; (ICARDA-2) None; (ICARDA-3) 1 draft of the Bioeconomic and or multi-agent model developed and discussed with stakeholders including women and youth (report); (ICARDA-4) None; (ICARDA-5) Collect documentation on existing pastoral laws and codes from drylands in developing countries (bibliography); (ICARDA-6) Inventory of the already undertaken research works (papers, books, scientific reports, etc.) and studies related to impacts of soil and water conservation techniques finalized (report); (ICARDA-7) None; (ICARDA-8) 60 ha of no-till barley, vetch and vetch-barley</p>	932.865

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	scaling up)	<p>General objective: To improve agricultural livelihood assets and resilience in marginal drylands</p> <p>Specific objectives: To raise the awareness of major program's stakeholders (including policy decision-makers and development organizations) on importance of conserving agro-biodiversity, gender and youth equities and chances of out-scaling innovations; To identify potential options of technological (e.g. post-harvesting), economic (input/output markets' links) and institutional (community-based organizations) interventions to enhance impact; To assess possible effects climate change on household welfare and natural dryland resources (soil, water and biodiversity); To assess likely impacts of the policy, institutional and technological interventions on agricultural productivity, household welfare, gender and youth equity and livelihood system resilience in the face of unexpected climate and other global change; To identify optimal, relevant policy interventions regarding improving marginal dryland's livelihood assets, impact and resilience.</p> <p>Methods: Social-ecological context similarity</p>	<p>mixture at on-farm level with or without cactus-based alley cropping systems implemented in Zoghmar (report); 2 Local plants collected and their Anthelmintic <i>in vitro</i> activity tested (report);</p> <p>Outputs in 12 months: (ICARDA-1) Report on the process of the innovation platform initiative catalysed through CRP-DS funding in 2014 which highlights key lessons learned and short term outcomes achieved;(ICARDA-2) 2 scientific papers on sheep and olive value chains submitted for publication; (ICARDA-3) 1 Model calibrated, Scenarios simulated/identified, and results analyzed (report); 1 scientific paper published; (ICARDA-4) Assessment report on soil and water conservation practices and natural resources management implemented by DG ACTA; Role of women and youth in degradation and conservation of natural resources analyzed, reported and used in the planning process (report); (ICARDA-5) 1 multi-stakeholders and decision makers (15 person) workshop on developing pastoral code for governing communal rangelands in Tunisia with emphasis on woman's role organized (report); (ICARDA-6) Report on 'Integrated impacts of soil and water conservation techniques' produced; 3 PhD students and 1 researcher involved in a 3-days workshop on the use of a watershed-based soil and water model and in research activities on the impacts of SWC (report); (ICARDA-7) Status and trends of agro-biodiversity and its threats assessed, monitored and reported; Impact of climate change on rangeland plant community evaluated using ecological modelling (report); Non-destructive technique for estimating rangeland vegetation cover and biomass developed (report); 2 factsheets of key rangeland species published on CRP DS website;3 scientific papers submitted for publication; (ICARDA-8) 60 ha under zero tillage system combined or not with alley cropping monitored and evaluated (report); Current feeding calendar and gaps for nutrient deficiency analyzed (report); 4 major nutrient deficiencies identified (report); Small ruminant Water footprint assessed in Zoghmar (report); Fattening practices monitored and evaluated (report); Ethno practices of the natural vegetation resources on health status assessed (report); In vitro anthelmintic potential of some herbal medicines studied, documented and distributed; Small ruminant flock management package fine-tuned, documented and published (booklet); Livestock management guidelines under low input production systems developed; The role of women and youth in livestock activities assessed and awareness raised on the need for better equity in sharing</p>	

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		<p>analysis and mapping to guide data sampling/ collection and scaling-out; Farm-household surveys for building integrated, spatially explicit database for system analysis and modelling; Multivariate statistics analysis for identifying typology of smallholder agricultural livelihood systems (incl. socio-cultural system elements); Narrative-based human-environment system (HES) analysis of agricultural livelihood system dynamics (at two interlinked scales: farm and landscape) using both collected database and transaction analysis of female and male stakeholders; Bio-economic modelling; Multi-agent system modelling; Complementary use of bio-economic and multi-agent system models to generate future scenarios of land uses, livelihood outcomes in response to different policy, institutional and technological options/interventions; Comparative analysis of these generated scenarios for assessment trade-offs, synergies; Multi-stakeholder workshops for participatory appraisals of problems and risks, identification of scenarios and trade-offs, and options for coping with trade-offs.</p> <p>Gender dimension: To understand how vulnerabilities are different between men and women</p>	<p>responsibilities and benefits (report); 3 PhD and 2 master students enrolled in livestock activities (report); 2 field days organized for 50 farmers (50% women); 1 farmer travelling workshop in connection with CANA-CLCA (at least 20 participants), held (report); 1 training course on CA for 20 farmers and extension agents held (report);</p> <p>Outputs in 12 months (W3/Bil): (ICARDA-1) 4 papers published in national and international journals (2015); 1 technician trained on Post-harvest marketing, packaging and transport (2015); (ICARDA-2) Ex-ante evaluation for Conservation Agriculture based technologies in CWANA, drafted (2015); Report and publication on Enhanced crop-livestock integration in CA through optimized stubble grazing strategies and increased fodder availability from forages or fodder shrubs.(2015); Site-specific conservation agriculture technology packages fine-tuned and disseminated among 200 famers for enhanced farm productivity (2015); 3 training courses (one for each target country) for farmers (100), technicians (20) and extension people (10) on zero-tillage practices and integrated crop –livestock under CA. (2015); 2 PhD and 2 BSc students enrolled (2015); (ICARDA-7) Site specific adaptation of water saving technology packages established in the three production systems (4 sites in 2 countries) to provide options for improved water use efficiency (2015); 1 training for 10 women on dairy processing and marketing (2015) organized; 4 technicians trained in Cost Benefit Analysis and Economics of Natural Resources Management for WLI technologies (2015); 5 technicians trained in post-harvest processing technologies (2015); At least 4 training courses held by National Partners involving 4 participants each (2015); (ICARDA-11) Improving productivity of animal feed resources in KRB in Karkheh River basin (2015); (ICARDA-13) Inception workshop organized involving the 3 participating countries (2015); Questionnaire survey developed in partnership with NARS (2015); 2 group training courses for 5 participants organized (2015); 2 factsheets on the main indigenous species published (2015); (ICARDA-14) New accessions of Triticum durum (2), Hordeum vulgare (7), and Aegilops (3) collected and conserved ex-situ in the National Gene Bank of Tunisia (2015); On-farm conservation of 5 durum and 2 barley landraces in 3 governorates of Tunisia involving 14 lead farmers (2015); 5 field days/meetings for farmers in Tunisia for the participatory selection and on-farm conservation (2015); At least 11 students trained in PGR conservation (2015); (ICARDA-15) 1 MSc and 3 PhD students enrolled (2015); (ICARDA-16) 1 Policy Briefs (2015); 2 ongoing Working</p>	

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		farmers (gender-explicit vulnerability); To assist rural women and men in developing and acting on their own livelihood improvement options through collective action, based on improved understanding of roles of women and men in conserving agrobiodiversity; To support the elaboration of policies to offer opportunities to women and youth to participate in a self-determined manner in sustainable agricultural production conserving agro-diversity and in the post-harvest value chain.	papers (2015); 2 scientific papers submitted for publication (2015); (ICARDA-18) Baseline assessment report published and disseminated; Monitoring and evaluation plan designed; Capacity and needs assessment of the 17 CBOs carried out; 42 demonstration sites selected in the project area (10 micro catchment water harvesting systems, 20 demonstrations on conservation agriculture, two hydroponic pilot stations, 10 demonstrations on crop residues and agricultural by-products); 10 demonstrations for micro catchment water harvesting systems established in five locations and reported; 20 demonstrations of conservation agriculture established in 20 locations and reported; 2 hydroponic pilot stations established for intensive fodder production and reported; 10 crop residue and by-product piles in 10 locations established and reported; 30 training days held for the 51 CBO members; 51 learning exchange visits carried out (3 visits per CBO), covering learning aspects under ER 1, 2 and 3; 50 rainwater harvesting cisterns rehabilitated and constructed; 1 Evidence-based advocacy plan developed; Up to 4 short policy briefings published nationally and internationally; 2 days training course conducted, involving 15 members of the consortium and 34 representatives of the 17 CBOs; Four sets of multimedia case studies created and distributed nationally and internationally; 16 centralised training sessions (4 modules at 4 days each) implemented for 51 leading livestock holders from 17 CBOs and follow up support to implement best practices; 16 training sessions (4 modules at 4 days each) implemented in three different locations to cover a total of 450 livestock holders from the 17 CBOs and follow up support provided; 450 barns rehabilitated and equipped with necessary accessories; 4 lead livestock holders of the 17 CBOs provided with 68 rams; Farm log book-keeping kits distributed to 2,000 livestock holders; At least 40,000 colored ear tags distributed to 2,000 livestock holders; 17 CBOs and 450 livestock holders provided with basic tools for milk collection; 2,000 livestock holders received veterinary services through 1,440 visits; 10,000 copies of educational material distributed; Linkages to MoA and private service providers established; 2 model livestock field school farms established (one upgraded and one constructed); Cluster-based and participatory sheep and goat market system assessment (incl. gender analysis) conducted and reported; 4 dissemination workshops held on project technologies with the participation of ICARDA Country manager, CARE implementing teams, Livestock holders and decision makers (75 Participants for each workshop); Capacity and needs assessment of seven CBOs/SMEs/social enterprises conducted; 7 business plans developed; Capacity-development packages designed and delivered to each of the seven	

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			<p>CBOs/SMEs/social enterprises; Value chain inputs provided to the seven CBOs/SMEs/social enterprises (potentially three SMEs and four CBOs); Customized training for 50 women on entrepreneurship and marketing conducted for each cluster; Business plans designed for 10 women groups; Small grants provided to two women groups; (ICARDA-19) 5 field days organized (2015); CA manual for Middle East developed (2015); Provide technical support and training for Palestinian research and extension staff including training seminars with at least 20% women (2015); Supply 50 CA manuals (2015).</p> <p>Outcomes: (ICARDA-1) None; (ICARDA-2) None; (ICARDA-3) Modeling work results used by decision makers to tackle the issue of trade-offs and to build appropriate strategies for sustainable development of dry areas and adaptation strategies to shocks (report); (ICARDA-4) National development agencies (DG ACTA and CRDAs) adapt their strategies for an enhanced efficiency to control natural resources degradation (report); Methodology to review and assess the impact of PRODESUD 1 experience and national program on soil and water adopted by stakeholders including IFAD, DG ACTA and Ministry of Agriculture (report); (ICARDA-5) Awareness on sustainable communal rangeland management and governance increased among all concerned stakeholders including agro-pastoralists, local authorities and national decision makers (report); (ICARDA-6) Water productivity in farmers' fields in Zoghmar site improved up to 15% (report); (ICARDA-7) Awareness about negative impact of climate change highlighted; More accurate, faster and non-destructive techniques developed for monitoring and assessing rangeland condition (2 manuals); (ICARDA-8) Land degradation and energy saving decreased up to 10% through the use of no-till practices and shrub/cactus planting (report); Feed and food availability in the site is sustainably increased up to 10% by planting shrub/cactus (report); Crop yield and WUE (water use efficiency) improved by 10%, soil fertility restoration increased by 0,2% yearly, fuel consumption decreased by 20% in farmers' fields in Zoghmar (report);</p> <p>Outcomes (W3/Bil): (ICARDA-1) NARS capacity increased to advise their government on water scarcity in Agriculture (2015); Adoption by Tunisian Government of science based water management options on utilizing scarce water resources (2015); (ICARDA-7) NARS capacities built to estimate future climate impacts on production (2015); Enhanced</p>	

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			<p>livelihood of WLI targeted community members (2015); Women groups in target countries are empowered by adopting WLI recommended value chain approaches for cheese production (2015); (ICARDA-16): Increased knowledge of the Extension Services (2015); (ICARDA-18) At least 75% of male and female livestock holders have access to water (2015); The size of grazing land under collective management has increased by 25% (2015); At least 50% of male and female livestock holders have sustainably increased their fodder production by 15% (2015); At least 75% of male and female livestock holders have access to veterinary and extension services (2015); At least 50% of male and female livestock holders have increased their dairy production by at least 15% (2015); Abortion and death rate of newly born sheep and goats has decreased by at least 20% (2015); At least 75% of male and female livestock holders have access to livestock market information (2015); 7 CBOs/SMEs/social enterprises are applying their business plans and have increased their net income by at least 10% (2015); Improved capacity of 7 CBOs/SMEs/social enterprises to provide tailor made marketing services, access to relevant local and national markets and ability to appropriately respond to market opportunities (2015); At least 10 women groups are applying their business plans and have increased their net income by at least 10% (2015); High yielding vetch, wheat and barley seeds adopted and planted in 200 hectares (2015); (ICARDA-19) Greater awareness and knowledge of ZT, early sowing and CA, leading to improvements in crop productivity, profitability, and reduced soil degradation in Palestine (2015).</p>	

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2.3	System Research: Rainfed System interventions (testing, piloting and scaling up)	<p>Location: W1&2: Saiss (Morocco); W3/Bil: Mauritania, Morocco, Algeria, Tunisia, Libya, Egypt, Sudan, Djibouti, Somalia, Yemen, Jordan, Palestine, Lebanon, Syria, Iraq, Oman</p> <p>General objective: To improve the productivity, economic-ecological efficiency and stability of the intensive rain-fed farming systems in North Africa by intensification and diversification options</p> <p>Specific objectives: To assess the effects of different conservation agricultural technologies (ranging from zero/minimal tillage, soil/fertilizer nutrient management, water management to improved seeds and IPM) on crop productivity and resource use efficiency; To establish baseline settings of the socio-economic and biophysical performance indicators for further integrated impact assessments of interventions inclusive of all stakeholders; To evaluate the effectiveness of social group-specific knowledge on the improvement of collective management of tree (olive) resources for enhance farm system's stability and viability in the face of water scarcity; To determine the causes of system vulnerability and</p>	<p>Outputs in 6 months: (ICARDA-1) 1 Survey (database); (ICARDA-2) 3 on-farm demonstrations established on conservation agriculture on 6 ha (report); (ICARDA-3) 2 on-farm trials with the introduction of food legume crops and phosphorus fertilizer management plants installed and managed (report); 1 field visit to trials on food legumes and soil fertility held for 30-40 targeted farmers (report); (ICARDA-4) 3 Trials on IPM options established and data collected on disease, insect pests, weeds and effectiveness of the interventions (report); (ICARDA-5) 6 trials established on irrigation management of different crops (wheat, olive trees, potatoes, onion) and data collected and 1 field visit held for 40-60 targeted farmers (report); (ICARDA-6) Analysis of water productivity of meat and milk production in cattle (partial data); (ICARDA-7) None; (ICARDA-8) None; (ICARDA-9) Data collected on the differentiated impacts of labor opportunities on gender in the action site collected and analysed (report);</p> <p>Outputs in 12 months: (ICARDA-1) 1 Survey database completed (report); (ICARDA-2) 3 on-farm demonstration trials established and implemented and data on biomass, soil characteristics collected (report); (ICARDA-3) Best bet package of phosphorus management and improved varieties demonstrated to 30-40 farmers and technicians (report); (ICARDA-4) At least 2 IPM options for wheat and faba bean be developed (report); About 20-30% yield increase due to applications of IPM options on farm and on-station (report); (ICARDA-5) 2 on-farm demonstration trials implemented in 2 sites on the response of wheat to supplemental irrigation package and data collected and analyzed (report); 1 field day involving 30-40 farmers (report); 1 experiment implemented on the effect of different levels of supplemental irrigation on different varieties/lines of durum wheat and data collected and analyzed (report); 3 trials implemented on Deficit SI of olive trees (1), potatoes (1) and onion (1) in 0.25 ha each and data collected and analyzed (Report); (ICARDA-6) Report on water use in cattle production and on meat and milk water productivities; (ICARDA-7) 1 innovation platform established (report); Specific needs for technology, best practice, social or institutional intervention clearly identified by members within the agricultural innovation platform (report); New and more contemporary forms of social and economic organization piloted, in line with the Green Morocco Plan, and aimed at engagement in the areas of (i) effective access to technical information and improved primary inputs, (ii) cooperative options for more profitable marketing, reduction in post-harvest loss and sustainable natural resource</p>	2,252.242

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		<p>local coping mechanisms, and evaluate the feasibility of technologies, and monitor their adoption/Continue to monitor the development of the learning alliances initiated in all of the sites in 2013/14, which legitimated and defined the contextual entry point for an innovation platform to be initiated within each site; To identify the most optimal technology options (of intensification and/or diversification strategy) by means of bio-economic modelling, and socially, economically feasible pathways of out- and up-scaling of the defined options; To identify relevant human actors from the learning alliance for creating more gender-balanced working committees for facilitating the delivery of technological and institutional innovation; Establishment of working innovation platforms at sub-national level in five sites across the considered countries</p> <p>Methods: Participatory process of development of innovation platforms for promoting sustainable intensification and/or diversification; Landscape-level narrative-based system analysis of favourable farming systems; Social-economic, agronomic data collection; Multivariate statistical analysis for</p>	<p>management (report); (ICARDA-8) Literature review on bio-economic modeling completed and characterization report produced; Data and information gaps identified and primary and secondary data collected (Report); Simulation models to fill the gap and shared with all stakeholders for comments generated (report); (ICARDA-9) 1 report of findings and way forward agreed on by stakeholders; 1 workshop held for 15 participants with the relevant development organizations, policy makers, and NGOs to relay findings and co-identify means to address gender wage gap in agriculture (report); Gender wage gap in agricultural labor identified and it is expected that 3-5 development agencies and/or NGOs and 5 policy-makers be sensitized on addressing the gender wage gap in agricultural labor of Morocco (report);</p> <p>Outputs in 12 months (W3/Bil): (ICARDA-1) 2 papers published in national and international journals (2015); Climate change model downscaling (2015); Adaptation, calibration and validation of regional models using local datasets and international tools (FAO-Aquacrop, USDA/TA&M SWAT and USDA/WSU CropSyst) – 2015; 1 technician trained on Post-harvest marketing, packaging and transport (2015); (ICARDA-3) 3 value chains analyzed (chickpea, lentil, faba bean) (2015); Baseline data for 1,500 HH analyzed (2015); 3 Village Based Seed Enterprises (VBSE) - 20% women established and operational (2015); Final product (Faba Bean processing into “Bisara”) processed, packaged and tested for marketing (2015); 3 agronomic packages for food legume production tested and validated at community level (2015); 5 Innovation Platforms - 20% women fully operational (2015); 4 PhD initiated and 10 MSc completed – 20% women (2015). 2 ICT based knowledge sharing platform at community level developed (2015); (ICARDA-4) 1 scientific paper published (2015); 250 target beneficiaries trained on CA practices (2015) 3 PhD theses initiated (2015); (ICARDA-5) Data set on water application, soil moisture, crop growth and development reported (2015); Guidelines for the use of supplemental irrigation developed (2015); 25 to 30 farmers, technicians and engineers trained during 2 field days through on the job training (2015); 4-5 engineers (50% men and 50% women) trained on supplemental irrigation management (2015); (ICARDA-6) 3 new models of low cost zero tillage drill prototyped and manufactured with the private sector (2015); 5000 stakeholders aware of CA (2015); (ICARDA-7) Site specific adaptation of water saving technology packages established in the 3 production systems (5 sites in 3 countries) to provide options for improved water use efficiency (2015); 1 training session for 25 women on dairy processing and marketing (2015); 6</p>	

Level	Level of Organization within the CRP	Description of planned key activities at each level of internal organization	Expected results of planned key activities	Planned Budget (\$ 000s)
		<p>defining farm-household typology (incl. socio-cultural system elements/institutions); Crop simulation modelling (select one among available model and calibrate it); Bio-economic modelling; Model-based ex-ante assessments of intensification options (technical, policy and institutional aspects); Multi-stakeholder participatory workshops</p> <p>Gender dimension: To measure and understand underlying reasons regarding gender wage gaps in agricultural labor; To train women and men farmers for (i) improving their understanding of wheat production issues outside of their direct contribution to the wheat production chain, (ii) allowing them to pass on the knowledge to other women such female farm workers, and (iii) fulfilling non-traditional roles in wheat production with improved techniques</p>	<p>technicians trained in Cost Benefit Analysis and Economics of Natural Resources Management for WLI technologies (2015); 11 technicians trained in post-harvest processing technologies (2015); At least 7 training courses held by National Partners involving 7 participants each (2015); (ICARDA-11) Genetic improvement of winter barley for cold and drought environments, durum wheat for cold and mild-cold drylands, bread wheat for development of drought tolerant and yellow rust resistant varieties adapted to dryland in Iran (2015); Development and application of physiological and biochemical indices for screening cold and drought tolerant chickpea landraces, cold and Ascochyta blight tolerant chickpea cultivars for autumn planting in Highlands in Iran (2015); Improving forage legumes and associated production technologies for winter planting in cold highlands in Iran (2015); Development of high yielding spring wheat cultivars tolerant to terminal drought and heat stresses in irrigated southern warm and dry zones (2015); Development and production of salt tolerant wheat varieties (2015); Development of pre-breeding materials for resistance to Ascochyta blight and Fusarium wilt in chickpea and lentil resistance to fusarium wilt in lentil (2015); Evaluation and development of pre-breeding Wheat materials for resistance to Wheat Rust (2015); 2 workshops (Innovation Platform and Sustainable intensification) 25 participants each. (2015); 6 field days for 120 farmers (2015); (ICARDA-12) At least 8 accessions of forage and pasture legumes identified as potential cover crop species (2015); 1 MSc student enrolled (2015); (ICARDA-14) ~25 local landraces of faba bean collected for ex-situ conservation and at least 70 accessions of local landraces of faba bean will be deployed for on-farm conservation and farmers participatory on-farm conservation (2015); 4 field day for farmers in Morocco for the participatory selection and on-farm conservation (2015); 3 MSc students (1 women) completed their thesis (2015); (ICARDA-15) 1 MSc and 3 PhD students enrolled (2015); (ICARDA-19) 10 ZT farmer demonstrations in Jenin and 9 in Tubas – completed (2015); 14 field days organized (2015); Training seminars in Jenin completed (2015); CA manual for Middle East (2015); Supply 50 CA manuals (2015); (ICARDA-20) 1 improved production package with several technologies adapted to rainfed conditions disseminated in four pilot demonstration sites in Morocco (Saiss) (2015); 4 pilot demonstrations implemented in farmers' fields in Meknes area (2015); 1000 farmers, technicians and extension agents (20% women) exposed each year to new technologies through various methods of dissemination (farmers' fields schools, field days, national travelling workshop...etc.); 2 extension agents trained under ToT program on wheat production platform approach; 2 Young agricultural scientists</p>	

Level	Level of Organization within the CRP	Description of planned key activities at each level of internal organization	Expected results of planned key activities	Planned Budget (\$ 000s)
			<p>trained in 2015 in specific topics of wheat technologies and improvement.</p> <p>Outcomes: (ICARDA-1) None; (ICARDA-2) Most of the 60 targeted farmers adopt introduced conservation agriculture package, and increase in awareness on diversification and crop rotation (report); (ICARDA-3) None; (ICARDA-4) At least 50 farmers apply IPM technology (report); (ICARDA-5) At least 60 farmers apply supplemental irrigation packages developed by the program on wheat (report); (ICARDA-6) None; (ICARDA-7) None; (ICARDA-8) None; (ICARDA-9) Awareness of relevant development agencies, NGOs and policy makers rose (report);</p> <p>Outcomes (W3/Bil): (ICARDA-1) NARS capacity increased to advise their government on water scarcity in Agriculture (2015); Adoption by Tunisian Government of science based water management options on utilizing scarce water resources developed by the project (2015); (ICARDA-3) 3,000 farmers (on 10,000 ha) – 20% women - use the packages developed to enhance food legumes in the wheat based systems in Morocco (2015); 5,000 farmers' capacities (20% women) are improved in enhancing food legume production in wheat based systems (2015); (ICARDA-5) Guidelines for the use of supplemental irrigation adopted at the governorate level (Khemis Miliana); (ICARDA-6) 500 farmers tested and adopted CA options with an increase of production by 30% and reduction of fuel consumption of 40% and related 15% increased income (2015); Increase in CA area by 6,000 hectares (2015); Government provides subsidies to farmers to purchase ZT drill (2015); (ICARDA-19) Greater awareness and knowledge of ZT, early sowing and CA, leading to improvements in crop productivity, profitability, and reduced soil degradation in Palestine (2015); (ICARDA-20) 150 farmers in 2015 adopted improved wheat production packages with average on-farm yields increased by 10%; Increased knowledge of the Extension Services (2015).</p>	

Level	Level of Organization within the CRP	Description of planned key activities at each level of internal organization	Expected results of planned key activities	Planned Budget (\$ 000s)
2.4	System Research: Irrigated crop System interventions (testing, piloting and scaling up)	<p>Location: W1&2: Nile Delta (Egypt); W3/Bil: Syria, Lebanon, Palestine, Jordan, Iraq, Yemen, Egypt, Tunisia, Algeria, Yemen, Iran, Morocco, Turkey</p> <p>General objective: To improve household welfare, its stability and equity, and to protect soil-water resources from degradation in irrigated farming systems in North Africa dryland, and to provide science-based support to policy decision-making towards achieving this development goal.</p> <p>Specific objectives:</p> <p>To assess livestock (esp. buffalos) production gaps (current productivity compared to potential) and opportunity for reducing the gaps; To assess economic-ecological efficiency and productivity induced by different technological options (e.g. water-saving irrigation, groundwater water uses, new planting options, mechanized raised-bed planting, soil amendments for minimizing salinity); To evaluate farms' adoption of these technological options and key social, cultural, human capacity, economic and policy/institutional drivers of adoption; To establish baseline data on the socio-economic and biophysical</p>	<p>Outputs in 6 months: (ICARDA-1) Monitoring process in place (report); 1 survey on production systems developed with collection of 25 samples (report); (ICARDA-2) 2 raisedbed machines purchased and delivered (report); Implementation of 50 demonstration fields targeting a minimum of 150 farmers (report); 2 Faba bean varieties with high yield and pest resistance identified (2 elite lines each of characteristics); new pesticide for 1 IPM option and 2 elite lines each of wheat with high yield and pest resistance identified (report); (IWMI-3) None; (ICARDA-4) 1 interim report produced on salt dynamics under contrasting irrigation and cultivation practices; At least 20 field trails of winter season implemented (data collected); (ICARDA-5) None; (ICARDA-6) Comprehensive analysis of production systems, livelihood opportunities and constraints produced (report); Relevant data collected (dataset); (ICARDA-7) Data analysed and workshop presented on gender-specific needs in extension advice for integration into NARS (ARC) programming (report).</p> <p>Outputs in 12 months: (ICARDA-1) Data collected and 50 samples on production systems analysed (report); 1 report on the role of livestock in Nile delta farming systems; The role of women in terms of time and local knowledge in milk processing in Nile delta identified and reported; 10 farmers trained on integrated crops livestock system approach (report); (ICARDA-2) 1 report on adoption of mechanized raisedbed technology includes yield and water consumption comparing to the traditional farmer practices; 1 brochure on mechanized raisedbed implementation in Nile Delta developed and distributed to at least 200 recipients (farmers and technicians); Report on the role of women in scaling out and adopting of new farming systems produced; 50 farmers and 5 extensionists trained on raisedbed planting (report); 10 farmers trained in fababean cultivation under raisedbed and IPM technologies (report); 10 farmers Trained in wheat cultivation under raisedbed and IPM technology (report); (IWMI-3) Technical report on the use of shallow ground water in the Nile Delta (GIS analysis of well density in the project area); Gender dimensions will be identified and reported through the field work for future follow up; At least 2 master students trained on the field surveys (report); (ICARDA-4) 3-5 biophysical scientists involved in the project include gender-differentiated impact analysis in their technology development (Report); 15 farmers trained on the new proposed technologies (report); (ICARDA-5) A report on entry points for an innovation platform identified in 2014 are better articulated and substantiated through evidence</p>	1,242.634

Level	Level of Organization within the CRP	Description of planned key activities at each level of internal organization	Expected results of planned key activities	Planned Budget (\$ 000s)
		<p>indicators for further integrated impact assessments of policy-technological interventions as well as of climate change; To develop capacity of farmers and extension services in efficient, flexible uses of improved technologies in adapting to climate change; To establishment of innovation platforms at sub-national level for promoting the out-and up-scaling of innovations;</p> <p>Methods: Participatory (multi-stakeholders) process of development of innovation platforms for promoting sustainable intensification; Landscape-level narrative-based system analysis of agricultural system analysis (incl. socio-cultural system elements); Social-economic, agronomic data collection; GIS analysis of well density; Field-based soil degradation assessment; Hydrological analysis of shallow water dynamics; Multi-stakeholder participatory workshops</p> <p>Gender dimension: To understand the role of gender differences in benefitting from agricultural innovation (technological, social, and institutional) in irrigated areas, and how socio-economic, political-legal and cultural systems determine them; To improve policies,</p>	<p>(qualitative and quantitative); 1 innovation platform is struck; at least 1 funding proposal is prepared and submitted to national and international sources in order to support the platform (report); (ICARDA-6) 1 baseline survey report; 1 report on climate change historical impact on agriculture in the Nile delta; 1 report on climate change future impact on agriculture in the Nile delta; 10 stakeholders trained on the developed climate change adaptation strategies for Nile Delta (report); Gender disaggregated data collected (dataset); Biophysical scientists involved in the project include gender-differentiated impact analysis in their technology development (report); (ICARDA-7) Increased awareness of 3-5 policy-makers, 60 extension agents, and other relevant officials on role that gender has in innovation adaption and adoption in irrigated agriculture through agricultural extension (workshop report); At least 2 students trained on qualitative research in examining gender issues in irrigated agriculture (report); 1 workshop on perceptions and strategies to cope with climate change held with at least 50 farmers and stakeholders (report); 1 workshop to present findings to the national policy makers (report); 2 follow up workshop on gender empowerment through innovations in irrigated agriculture held with policy makers, extension agents and other relevant officials along with media presence (report); 1 training on participatory facilitation provided to all national focal points (report);</p> <p>Outputs in 12 months (W3/Bil): (ICARDA-1) 2 papers published in national and international journals (2015); Climate change model downscaling (2015); Adaptation, calibration and validation of regional models using local datasets and international tools (FAO-Aquacrop, USDA/TA&M SWAT and USDA/WSU CropSyst) (2015); 2 technicians trained on Post-harvest marketing, packaging and transport (2015); (ICARDA-2) Resource use efficiency and profitability (2015); 2 BSc students enrolled (2015); (ICARDA-5) Data set on water application, soil moisture, crop growth and development reported (2015); Guidelines for the use of supplemental irrigation developed (2015); 25 to 30 farmers, technicians and engineers trained during 2 field days through on the job training (2015); 4-5 engineers (50% men and 50% women) trained on supplemental irrigation management (2015); (ICARDA-7) Site specific adaptation of water saving technology packages established in the 3 production systems (4 sites in 2 countries) to provide options for improved water use efficiency (2015); 4 technicians trained in Cost Benefit Analysis and Economics of Natural Resources Management for WLI technologies (2015); 5 technicians trained in post-harvest processing technologies (2015); At least 4 training courses held by</p>	

Level	Level of Organization within the CRP	Description of planned key activities at each level of internal organization	Expected results of planned key activities	Planned Budget (\$ 000s)
		development interventions and agricultural extension services on the basis of this understanding;	<p>National Partners involving 4 participants each (2015); (ICARDA-8) Literature review and technical report about: Geoinformatics and modern technology for more sustainable agriculture management to mitigate the current and potential climate change impact (Report); Report on year calibrated AquaCrop & CROPWAT models for crop-water function and productivity simulation under different weather conditions in three agro-ecological zones (AEZs); Report on calibrated and validated models for crop-water functions, irrigation scheduling, and agriculture management; 1 training course for the benefit of 25 participants (20% are female) from 10 countries held on the topic “Farm management strategies to improve crop-water productivity using AquaCrop”; 60 trained farmers and agriculture engineers on field management (4 field days); 8 NARS researchers trained on soil profiling and sampling; Report on the identification of the proper irrigation management and planting methods for recent wheat varieties in old lands; (ICARDA-9) Detailed technical report on saline soil management (2015); Technical report on water and salts balance at meso scale (2015); Soil amendments package to combat salinity (2015); 25 junior researchers and extension officers trained on the management of salinity (2015); 2 training programs organized for 40 farmers (2015); 1 PhD and 6 Masters students (2 women) enrolled (2015); Report on the Role of women in water resources management; (ICARDA-10) 1 regional gender training workshop with at least 15 participants (2015); (ICARDA-11) Integration of soil and water-related factors to sustain crop production in Honam subcatchment of Karkheh River Basin; (ICARDA-12) 1 MSc student enrolled (2015); At least 8 accessions of forage and pasture legumes identified as potential cover crop species (2015); (ICARDA-15) 1 MSc and 3 PhD students enrolled (2015); (ICARDA-16) 2 ongoing Working papers (2015); 1 Methodological Guideline Report on “Approaches to Total Factor Productivity (TFP) Measurements in the Agriculture Economy” used as supporting and reference material for the Agricultural Economics Students at Zagazig University – Egypt (2015); 1 scientific papers submitted for publication (2015); (ICARDA-20) 1 improved production package under irrigated conditions disseminated to increase and stabilize wheat yield in at least 200 (2015) farmers’ fields in Egypt (Dakahlia); 3 trials established in farmers’ fields under saline conditions to customize improved options for wheat yield intensification under marginal irrigated conditions; 1-2 promising wheat lines released for salinity tolerance; at least 200 demonstrations in farmers’ fields created; 2000 farmers, technicians and extension agents (20% women) exposed each year to new technologies through various methods of dissemination (farmers’ fields schools, field days, national travelling workshop...etc.); 4 Young</p>	

Level	Level of Organization within the CRP	Description of planned key activities at each level of internal organization	Expected results of planned key activities	Planned Budget (\$ 000s)
			<p>agricultural scientists trained in 2015 in specific topics of wheat technologies and improvement;</p> <p>Outcomes: (ICARDA-1); 10 farmers involved in the project adopt the recommendation on livestock role in the farming system and increase their profit up to 15% as compared to baseline data (report); (ICARDA-2) At least 300 farmers in the Nile Delta have adopted the raisedbed technology (report); 300 farmers adopting proposed technologies receive the following benefits: crop yields increased by 20%, faba bean yields increased by 30%, pesticides costs are reduced up to 25%, wheat yield gaps reduced by 20%, irrigation water saved by 20% (report); (IWMI-3) None; (ICARDA-4) Information generated on salt dynamics on maintaining the optimum depths of drains adopted by decision makers (report); 50 farmers involved in field demonstration days, acquired knowledge on the new proposed technologies (report); (ICARDA-5) None; (ICARDA-6) National partners use the results of livelihood and production systems analysis in their formulation of options to address constraints (report); Coping mechanisms for system vulnerability are adopted by decision makers (report); (ICARDA-7) 3-5 decision-makers sensitized and engaged in dialogue on gender empowerment approaches in irrigated agriculture (report); NARS (ARC) adopts identified gender empowerment approaches (report);</p> <p>Outcomes (W3/Bil): (ICARDA-1) NARS capacity increased to advise their government on water scarcity in Agriculture (2015); Adoption by Tunisian Government of science based water management options on utilizing scarce water resources developed by the project (2015); (ICARDA-5) Guidelines for the use of supplemental irrigation adopted at the governorate level (Khemis Miliana); (ICARDA-7) Palestinian Policy Makers adopt WLI recommendation for water shed design (2015); Women groups in target countries are empowered by adopting WLI recommended value chain approaches for cheese production (2015); (ICARDA-8) Expected increase of farmers' income by minimum 5% and water productivity by 10% thanks to integrated package for better on-farm management to the selected and tested wheat varieties (2015); (ICARDA-9) Improved equity of water distribution on 400 feddan (2015); Improved water and salt management in the aquaculture farms (2015); Soil amendments adopted on 50 feddan (2015); (ICARDA-10) At least 10% increase in the income of small-scale</p>	

Level	Level of Organization within the CRP	Description of planned key activities at each level of internal organization	Expected results of planned key activities	Planned Budget (\$ 000s)
			producers, 200-500 HH per country (2015); (ICARDA-12) Enhanced information on cover crop species; (ICARDA-20) A functional and efficient extension service supported to enhance the adoption of the proven improved wheat based technologies established in Egypt (2017); Increased knowledge of the Extension Services (2015) ;	

Table 3. North Africa and West Asia Activities by Action Sites

I. Béni Khedache-Sidi Bouzid, Tunisia

#	Short Title	Full Title	CG Center	Activity Leader	Other Scientists (CG)	Discovery	Proof of Concept	Pilot	Scaling Up	1	2	3	4	5	6	Budget
1	Innovation platforms and women/youth associations	Innovation platforms & scenarios Objective: Continue to monitor the development of the learning alliances initiated in all of the sites in 2013/14, which legitimated and defined the contextual entry point for an innovation platform to be initiated within each site. Parse out relevant actors from the learning alliance in order to create a working committee that is charged with research aimed at understanding and uncovering effective processes for innovation to proceed as well as issues related to 'capacity to innovate', specific gender related outcomes, and delivery of objectives, outputs and outcomes that are defined by the innovation system (actors engaged in the innovation platform); Establishment of innovation platforms at sub-national level with appropriate gender balance in five sites across the four countries, to address social, institutional, organizational and technical barriers to innovation; Augment (or build where required) facilitation capacity within national partner institutions through action learning (experiential learning, mentoring/coaching); Cross-country reflection and learning, with specific attention to the	ICARDA	s.kassam@cgiar.org	a.aw-hassan@cgiar.org b.dhehibi@cgiar.org		100%			10%	10%	0%	10%	20%	50%	15,000

#	Short Title	Full Title	CG Center	Activity Leader	Other Scientists (CG)	Discovery	Proof of Concept	Pilot	Scaling Up	1	2	3	4	5	6	Budget
		contribution of research to development in each of the sites; Document the implementation and outcomes of the work in the four countries, with synthesis of cross-country learning; This initiative is closely tied together with Post-Harvest and Market Access and High Value Chain Cluster activities.														
2	Sheep and olive Value Chains	Value chains of cash crops for enhancing market access to small holder farmers and improved harvest and post-harvest technologies (Olive oil of Beni Khedache; sheep of Zoghmar)	ICARDA	b.dhehibi@cgiar.org	a.aw-hassan@cgiar.org	100%				10%	10%	30%	10%	10%	30%	15,000
3	System analysis and modeling	Develop and use bio-economic models connecting field-farm-regional scales for variety of farm typologies under different market and climate scenarios and for assessing ex-ante and ex-post impacts of different interventions and policies	ICARDA	y.yigezu@cgiar.org	R.Telleria@cgiar.org; A.Frija@cgiar.org	100%				30%	10%	10%	30%	10%	10%	15,000
4	Impacts of soil and water conservation works	Evaluate and synthesize the impacts (biophysical, economic, social, including gender, and environmental) of soil and water conservation programs and synthesize lessons learned	ICARDA	a.aw-hassan@cgiar.org	C.Zucca@cgiar.org; R.Telleria@cgiar.org		100%			20%	0%	0%	30%	20%	30%	15,000
5	Pastoral Code and related policies	In collaboration with decision makers and users develop a national pastoral code and assess and promote needed policies	ICARDA	m.louhaichi@cgiar.org	R.Telleria@cgiar.org; J.Werner@cgiar.org	100%				30%	0%	0%	40%	0%	30%	24,930
6	Management of water scarcity	Managing water scarcity and combating land degradation. Review of the research already undertaken on the impacts of soil and water conservation techniques (SWC).	ICARDA	C.Zucca@cgiar.org	t.oweis@cgiar.org		100%			40%	20%	0%	40%	0%	0%	30,000

#	Short Title	Full Title	CG Center	Activity Leader	Other Scientists (CG)	Discovery	Proof of Concept	Pilot	Scaling Up	1	2	3	4	5	6	Budget
7	Management of communal rangelands and biodiversity conservation	Managing agro-pastoral rangelands and biodiversity conservation: (i) In situ agro-biodiversity conservation and sustainable use; (ii) Develop pastoral code for managing communal rangelands in Tunisia; (iii) Develop tools, protocols and indicators for assessing and quantifying rangeland degradation (iv) Assess the impact of climate change on rangeland productivity.	ICARDA	m.louhaichi@cgiar.org	J.Werner@cgiar.org; M.Yazbek@cgiar.org			100%		40%	0%	0%	40%	0%	20%	30,000
8	Community-based flock and crops management	Setting up a Community based flock management programs: (i) Improve food and feed, water and land productivity through Conservation Agriculture and alley cropping systems; (ii) Assessment of nutritional status and water footprint of AnGR; (iii) Impact MAP on meat quality and animal health status (sheep, goats, camels)	ICARDA	h.bensalem@cgiar.org	M.Rekik@cgiar.org; H.Cicek@cgiar.org			100%		10%	30%	40%	10%	10%	0%	60,000
TOTAL																204,930

II. Saiss, Morocco

#	Short Title	Full Title	CG Center	Activity Leader	Other Scientists (CG)	Discovery	Proof of Concept	Pilot	Scaling Up	1	2	3	4	5	6	Budget
1	Sustainable Intensification of Crop-Livestock production systems	Sustainable Intensification of Crop-Livestock production systems (wheat, food legumes, forages)	ICARDA													73,017
1.1	Dissemination of conservation agriculture (ICARDA-1)	Dissemination of conservation agriculture (CA) in wheat based system for increased productivity and product quality. The objective of this study is to demonstrate CA cropping systems and introduce no-till seeding to farmers in Meknes.	ICARDA	h.bensalem@cgiar.org	h.cicek@cgiar.org			100%		0%	30%	40%	30%	0%	0%	24,339
1.2	Rehabilitation of food legumes system (ICARDA-2)	Rehabilitation of food legumes system. Objective: Diversify wheat-based system through the introduction of food legume crop and new varieties and better management of phosphorus fertilizer.	ICARDA	m.bohssini@cgiar.org	m.karrou@cgiar.org		100%			0%	40%	30%	30%	0%	0%	24,339
1.3	Cereal & legumes systems IPM (ICARDA-3)	Cereal & legumes systems IPM Objective: To promote already established IPM options increasing crop productivity at the farm level and develop new ones for the management of emerging biotic constraints for the cereal and food legume systems.	ICARDA	s.a.kemal@cgiar.org	m.bohssini@cgiar.org		100%			0%	40%	30%	10%	20%		24,339
2	Enhancing land and water productivity in mixed production systems	Enhancing land and water productivity in mixed production systems (potatoes, onion, olive trees, cereals, legumes, forages/cattle)	ICARDA													48,686

2.1	Water & land productivity in rainfed systems (ICARDA-4)	Water & land productivity in rainfed systems Objectives: Evaluate the response of the major crops (wheat, potato, onion, olive trees) and varieties (wheat) to different deficit/supplemental irrigation and dissemination improved package of wheat production (irrigation and fertilizers management).	ICARDA	m.karrou@cgiar.org	t.oweis@cgiar.org			100%		0%	30%	30%	0%	20%	20%	24,343
2.2	Water productivity of forage/cattle (ICARDA-5)	Water productivity of forage/cattle Objective: To characterize the current forage based cattle and dairy farming and feeding in Meknes area and develop interventions to increase the water productivity and efficiency of forage and livestock production.	ICARDA	s.ates@cgiar.org	m.hilali@cgiar.org			100%		0%	50%	20%	30%	0%	0%	24,343
3	Policies and institutions set-up	Policies and institutions set-up	ICARDA													57,927
3.1	System vulnerability (ICARDA-6)	System vulnerability	ICARDA	a.mazid@cgiar.org	a.aw-hassan@cgiar.org	100%				70%	20%				10%	9,251
3.2	Innovation platforms (ICARDA-7)	Innovation platforms & scenarios Objective: Continue to monitor the development of the learning alliances initiated in all of the sites in 2013/14, which legitimated and defined the contextual entry point for an innovation platform to be initiated within each site. Parse out relevant actors from the learning alliance in order to create a working committee that is charged with research aimed at understanding and uncovering effective processes for innovation to	ICARDA	s.kassam@cgiar.org	a.aw-hassan@cgiar.org; b.dhehibi@cgiar.org;		100%			10%	10%	0%	10%	20%	50%	24,338

		<p>proceed as well as issues related to 'capacity to innovate', specific gender related outcomes, and delivery of objectives, outputs and outcomes that are defined by the innovation system (actors engaged in the innovation platform); Establishment of innovation platforms at sub-national level in five sites across the four countries, to address social, institutional, organizational and technical barriers to innovation; Augment (or build where required) facilitation capacity within national partner institutions through action learning (experiential learning, mentoring/coaching); Cross-country reflection and learning, with specific attention to the contribution of research to development in each of the sites; Document the implementation and outcomes of the work in the four countries, with synthesis of cross-country learning; This initiative is closely tied together with Post-Harvest and Market Access and High Value Chain Cluster activities.</p>														
3.3	Bio-Economic models (ICARDA-8)	<p>Bio-economic farm models Objective: Develop bio-economic models that connect field-farm-household and regional scales, accounting for diversity of economic agents including farm typologies in a systems context for assessing ex-ante and ex-post impacts of</p>	ICARDA	y.yigezu@cgiar.org		100%				5%	25%	0 %	10%	20 %	40%	24,338

		alternative social, economic, policy, institutional, market and technological interventions under different climate change scenarios.														
4	Agricultural Gender Wage Gaps (ICARDA-9)	Agricultural Gender Wage Gaps Objective: Measure and understand underlying reasons gender wage gaps in agricultural labor.	ICARDA	d.najjar@cgiar.org			100%							100%		25,300
TOTAL															204,930	

III. Nile Delta, Egypt

#	Short Title	Full Title	CG Center	Activity Leader	Other Scientists (CG)	Discovery	Proof of Concept	Pilot	Scaling Up	1	2	3	4	5	6	Budget
1	Characterization of production systems	Characterization of production systems, livestock management practices, documenting feeding systems and assessing major nutrient deficiencies and water footprint	ICARDA	h.bensalem@cgiar.org	m.hilali@cgiar.org; a.swelam@cgiar.org	100%				0%	50%	0%	30%	20%	0%	24,300
2	Improve irrigated farming system	Improve irrigated farming system and productivity in Nile Delta	ICARDA	a.swelam@cgiar.org	a.aw-hassan@cgiar.org; f.maalouf@cgiar.org; s.kumari@cgiar.org				100%	10%	20%	10%	40%	10%	10%	74,520
3	Assessment of the uses of shallow groundwater	Assessment of the uses of shallow groundwater in the Old lands of the Nile delta and their determinants: Practices versus Policies	IWMI	d.el-agma@cgiar.org	none	100%				10%	10%	10%	50%	10%	10%	24,300
4	Quantifying the salt dynamics under contrasting irrigation and cultivation practices	Quantifying the salt dynamics under contrasting irrigation and cultivation practices at the plot level to develop and evaluate sustainable interventions to address soil degradation in the salt affected land	ICARDA	a.swelam@cgiar.org	b.george@cgiar.org		100%			20%	0%	0%	50%	0%	30%	28,490
5	Innovation Platforms	Innovation platforms & scenarios Objective: Continue to monitor the development of the learning alliances initiated in all of the sites in 2013/14, which legitimated and defined the contextual entry point for an innovation platform to be initiated within each site. Parse out relevant actors from the learning alliance in order to create a working committee	ICARDA	s.kassam@cgiar.org	a.aw-hassan@cgiar.org; b.dhehibi@cgiar.org		100%			10%	10%	0%	10%	20%	50%	12,150

		that is charged with research aimed at understanding and uncovering effective processes for innovation to proceed as well as issues related to 'capacity to innovate', specific gender related outcomes, and delivery of objectives, outputs and outcomes that are defined by the innovation system (actors engaged in the innovation platform); Establishment of innovation platforms at sub-national level in five sites across the four countries, to address social, institutional, organizational and technical barriers to innovation; Augment (or build where required) facilitation capacity within national partner institutions through action learning (experiential learning, mentoring/coaching); Cross-country reflection and learning, with specific attention to the contribution of research to development in each of the sites; Document the implementation and outcomes of the work in the four countries, with synthesis of cross-country learning; This initiative is closely tied together with Post-Harvest and Market Access and High Value Chain Cluster activities.														
6	Systems vulnerability of irrigated agriculture and adaptation to climate change	Systems vulnerability of irrigated agriculture and adaptation to climate change	ICARDA	a.aw-hassan@cgiar.org;	b.george@cgiar.org; a.mazid@cgiar.org		100%			50%	20%	0%	30%	0%	0%	33,070

7	Comparative study between new lands, old and salt lands	Comparative study between new lands, old and salt lands which differ in gender norms, technological, and environmental dynamics	ICARDA	d.najjar@cgiar.org			100%			10%	10%	0 %	0%	60 %	20 %	8,100
TOTAL																204,930

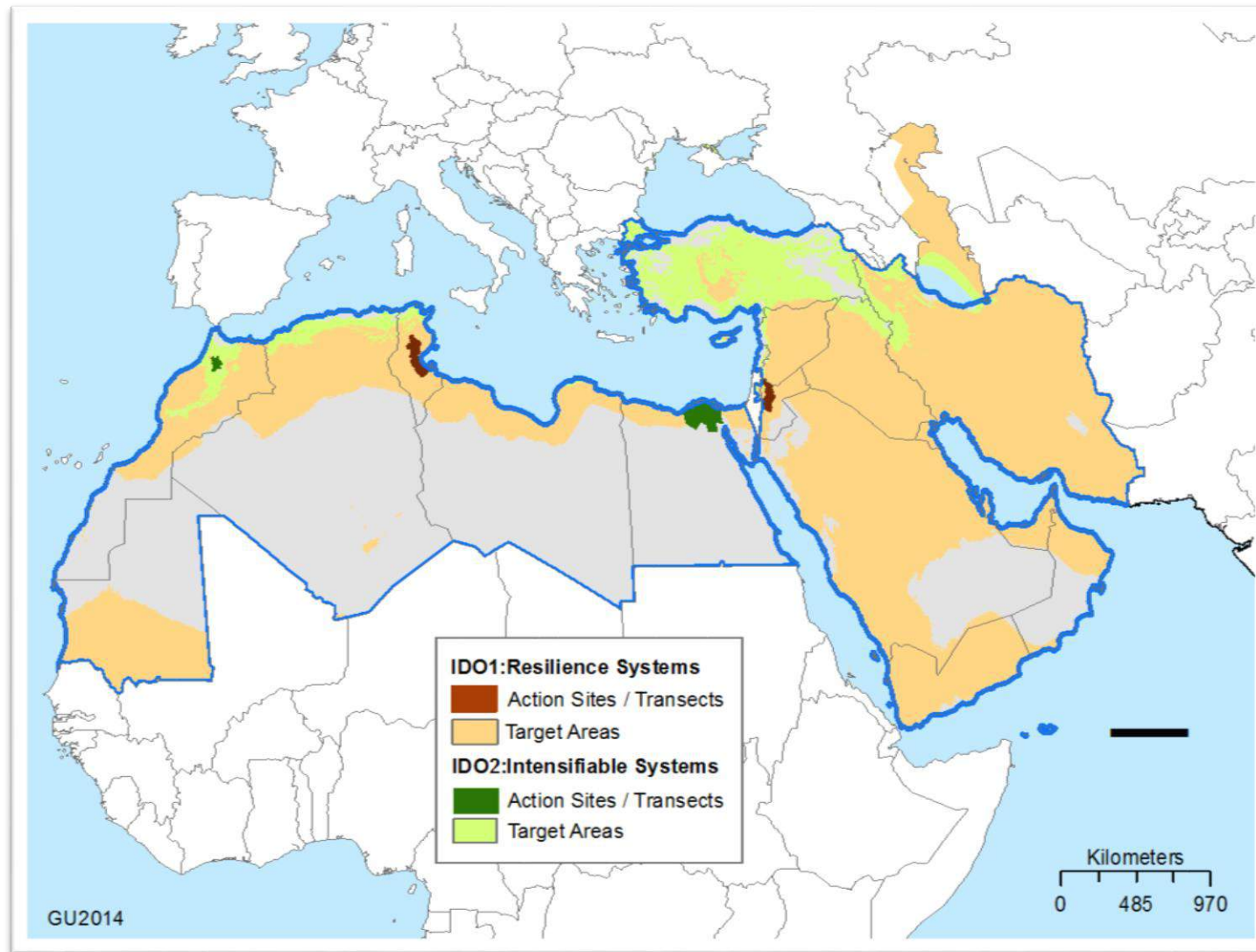
Table 4. North Africa and West Asia - Bilateral/W3 Projects X Cluster of Activities

ID	Lead Center	Project or Activity Title	From	To	Email	ESA %	CA %	NAWA %	Countries % (equal)	2015 Budget to DS (MUSD)	Agro-Pastoral %	Rainfed %	Irrigated %
1	ICARDA	Middle East North Africa Water and Livelihoods Initiative (WLI) - Tunisia	Oct-12	Sep-15	k.dodge@cgiar.org			100	Tunisia	0.047483	25	25	50
2	ICARDA	Integrated Crop-Livestock Conservation Agriculture for Sustainable Intensification of Cereal-based Systems in North Africa and Central Asia	Jan-13	Jan-16	h.bensalem@cgiar.org		30	70	Algeria, Tunisia, Tajikistan	0.540966	80	0	20
3	ICARDA	Increasing Food Legume production by small farmers to strengthen food and nutrition security through adoption of improved technologies and governance within south-south cooperation (INDIA_MOROCCO)	May-13	Dec-18	m.elmourid@cgiar.org			100	Morocco	0.429639	0	100	0
4	ICARDA	Integrated Natural Resources Management in Rainfed Agricultural Systems in Morocco (INRM)	Oct-07	Mar-17	m.elmourid@cgiar.org			100	Morocco	0.030000	0	100	0
5	ICARDA	Adaptation to Climate Change of the Mediterranean Agricultural Systems – ACLIMAS	Dec-11	Dec-15	m.karrou@cgiar.org			100	Algeria	0.150183	0	50	50
6	ICARDA	Adapting Conservation Agriculture for Rapid Adoption by Small Holder Farmers in Northern Africa	Jun-12	Jun-15	m.elmourid@cgiar.org			100	Algeria, Morocco, Tunisia	0.739032	0	100	0
7	ICARDA	Middle East North Africa Water and Livelihoods Initiative (WLI)- Regional	Oct-09	Sep-15	k.dodge@cgiar.org			100	Syria, Lebanon, Palestine, Jordan, Iraq, Yemen, Egypt	0.072942	30	40	30
8	ICARDA	Optimizing On-farm Water and Land Productivity in Irrigated Agriculture in Egypt	Sep-07	Dec-15	a.swelam@cgiar.org			100	Egypt	0.071383	0	0	100

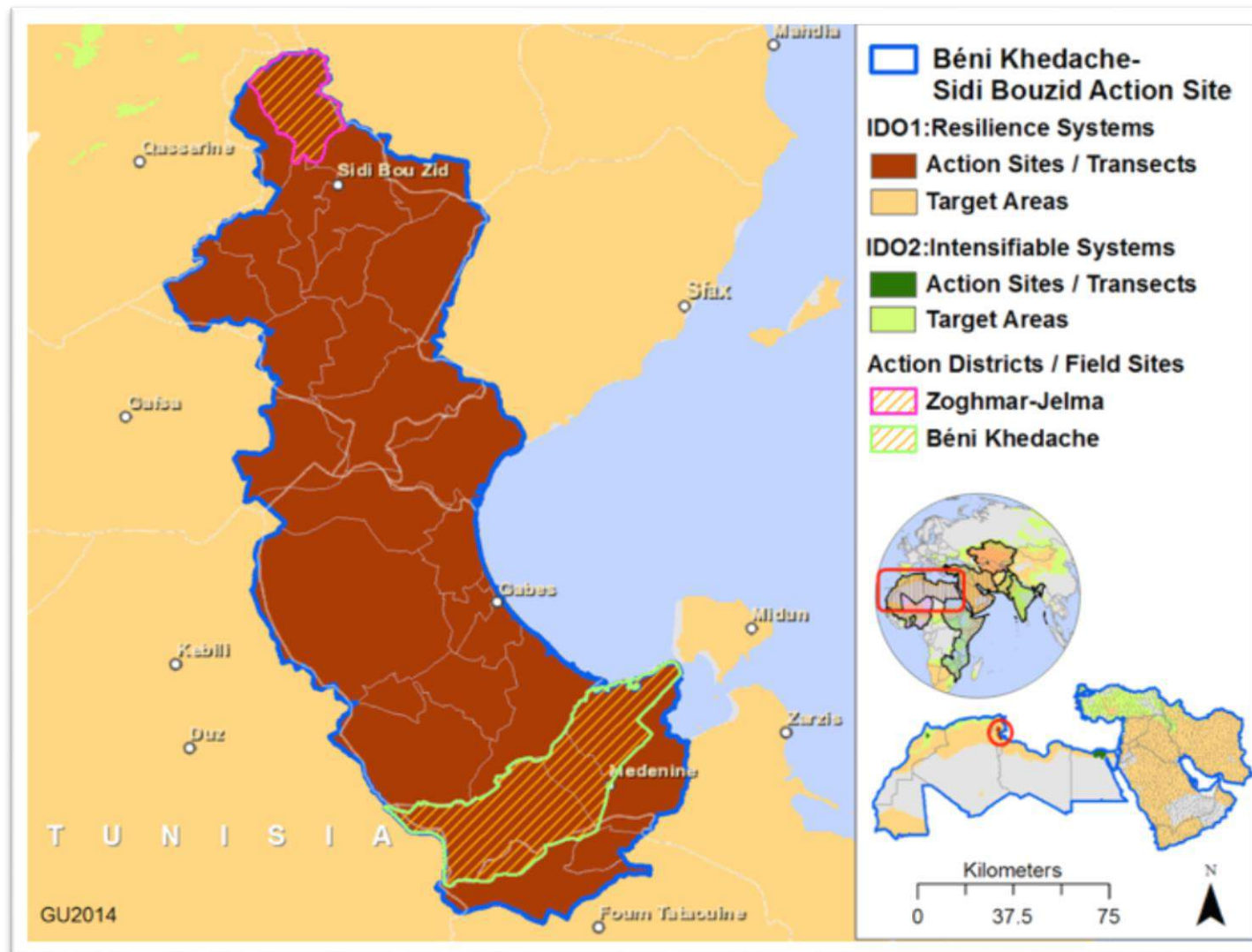
ID	Lead Center	Project or Activity Title	From	To	Email	ESA %	CA %	NAWA %	Countries % (equal)	2015 Budget to DS (MUSD)	Agro-Pastoral %	Rainfed %	Irrigated %
9	ICARDA	Management of Water and Salinity in the Nile Delta: a cross-scale integrated analysis of efficiency and equity issues	Sep-12	Jun-15	b.george@cgiar.org			100	Egypt	0.290055	0	0	100
10	ICARDA	Integrated Agricultural Production Systems for the poor and vulnerable in Dryland Areas: Nile Valley and Sub-Saharan Africa Region	Mar-14	Mar-16	m.owaygen@cgiar.org	50		50	Egypt, Eritrea, Ethiopia, Kenya, Sudan, Yemen	0.494700	0	50	50
11	ICARDA	Updated Collaboration Agreement for Strengthening Agricultural Research	Jan-07	Dec-15	s.rezaei@cgiar.org			100	Iran	0.315705	10	60	30
12	ICARDA	Optimizing Subsidiary Crop Applications in Rotations (OSCAR)	Apr-12	Mar-16	s.udupa@cgiar.org			100	Morocco	0.062191	0	50	50
13	ICARDA	Enhancing Sustainability and Fodder Production of Low Land Pastures through integrated Alley Cropping and Conservation Agriculture in Arid Agro-Pastoral Ecosystems in Jordan, Yemen and Tunisia	Sep-14	Aug-16	m.louhaichi@cgiar.org			100	Tunisia, Jordan, Yemen	0.085382	100	0	0
14	ICARDA	On-farm Conservation and Mining of Local Faba Bean Landraces of Morocco for Biotic and Abiotic stresses	Aug-12	Apr-15	s.udupa@cgiar.org			100	Morocco, Tunisia	0.082950	50	50	0
15	ICARDA	Fellowships Program and post graduate scholarships for implementing and managing agricultural research in the Arab countries	Feb-12	Dec-16	c.kleineremann@cgiar.org	15		85	Mauritania, Morocco, Algeria, Tunisia, Libya, Egypt, Sudan, Djibouti, Somalia, Yemen, Jordan, Palestine, Lebanon, Syria, Iraq, Kuwait, Bahrain, Qatar, Saudi Arabia, UAE, Oman	0.119429	33	33	34

ID	Lead Center	Project or Activity Title	From	To	Email	ESA %	CA %	NAWA %	Countries % (equal)	2015 Budget to DS (MUSD)	Agro-Pastoral %	Rainfed %	Irrigated %
16	ICARDA	Agricultural Productivity with an Enphasis on Water Constrains in the Middle East and north Africa (MENA)	Oct-12	Dec-15	b.dhehibi@cgiar.org			100	Tunisia, Egypt, Jordan	0.033688	66	0	34
17	ICARDA	Enhanced small-holder wheat-legume cropping systems to improve food security under changing climate in the drylands of West Asia and North Africa	Jan-11	Oct-15	m.bohssini@cgiar.org			100	Algeria, Egypt, Jordan, Lebanon, Morocco, Sudan, Tunisia and Turkey	0.107518	30	65	5
18	ICARDA	Strengthening Livestock Holders' livelihood in area C (Rawasi)	Nov-13	Oct-15	h.benhajsalah@cgiar.org			100	Palestine	0.110242	100	0	0
19	ICARDA	Development of Conservation Cropping Systems in the Dryland of Northern Iraq - Phase 3	Jul-12	Jun-15	a.haddad@cgiar.org			100	Palestine, Jordan	0.172909	20	80	0
20	ICARDA	Enhancement of Food Security in the Arab Region	Oct-14	Sep-17	h.halila@cgiar.org			100	Morocco, Egypt	0.284108	0	37	63

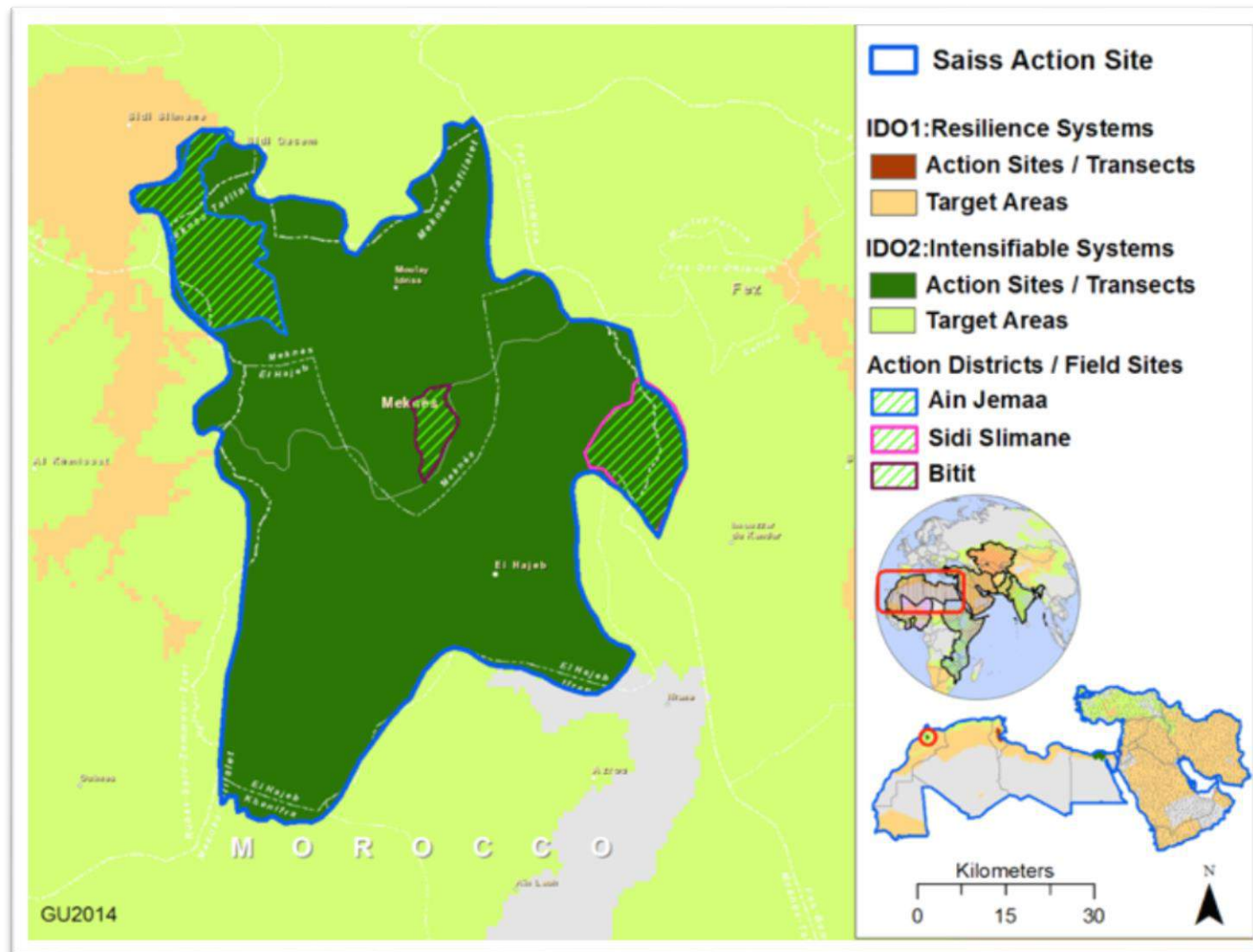
Map 1. North Africa and West Asia Flagship Boundaries



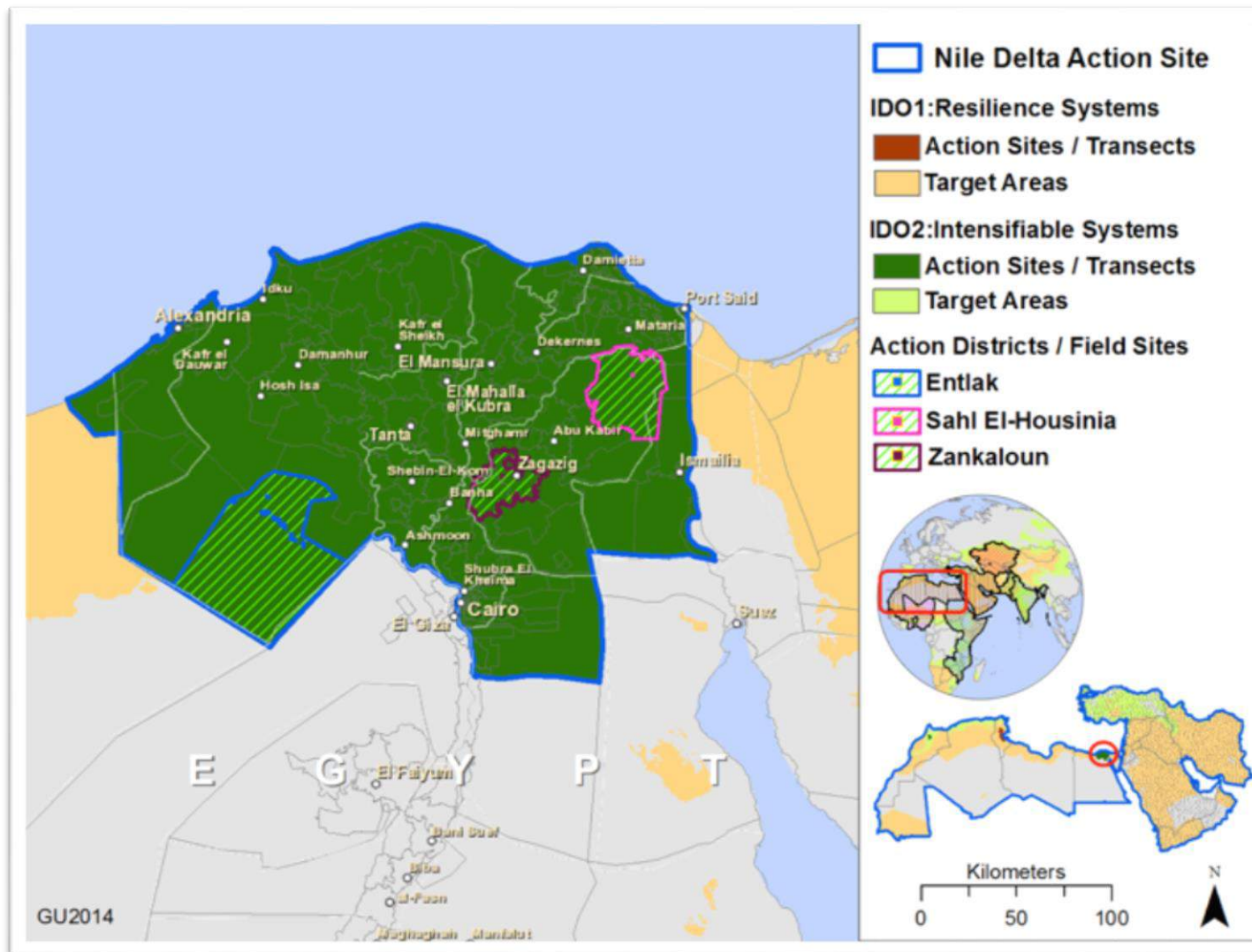
Map 2. Béni Khedache –Sidi Bouzid Action Site



Map 3. Saiss Action Site



Map 4. Nile Delta Action Site





RESEARCH
PROGRAM ON
Dryland Systems

The CGIAR Research Program on Dryland Systems aims to improve the lives of 1.6 billion people and mitigate land and resource degradation in 3 billion hectares covering the world's dry areas.

Dryland Systems engages in integrated agricultural systems research to address key socioeconomic and biophysical constraints that affect food security, equitable and sustainable land and natural resource management, and the livelihoods of poor and marginalized dryland communities. The program unifies eight CGIAR Centers and uses unique partnership platforms to bind together scientific research results with the skills and capacities of national agricultural research systems (NARS), advanced research institutes (ARIs), non-governmental and civil society organizations, the private sector, and other actors to test and develop practical innovative solutions for rural dryland communities.

The program is led by the International Center for Agricultural Research in the Dry Areas (ICARDA), a member of the CGIAR Consortium. CGIAR is a global agriculture research partnership for a food secure future.

For more information, please visit

drylandsystems.cgiar.org

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